

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) An interface device for use with an ultrasound imaging system having a scan head with at least one transducer, the interface device being removably attachable to the scan head, the interface device comprising:
a reservoir with a proximal end and a distal end, said proximal end being open and shaped to allow the transducer to be inserted within said reservoir, wherein said proximal end of said reservoir is configured to maintain a fluid tight seal between said reservoir and the scan head, and wherein said distal end of said reservoir is configured to extend past a distal end of the transducer,
a scan window located proximate said distal end of said reservoir through which ultrasound energy is transmitted and received, wherein said scan window is formed of a solid, non-flowable hydrogel,
a fluid tight seal between said scan window and said distal end of said reservoir, and a fluid acoustic coupling medium located within said reservoir and filling a space between said transducer and said scan window,
and means for adjusting a distance between said scan window and the transducer to allow adjustment of a position of said scan window with respect to a focus of the transducer.
2. (Original) The interface device of Claim 1, wherein the interface device is sterile.
3. (previously presented) The interface device of Claim 1, wherein said scan window is formed of a material with less than 1dB/mm signal loss of transmitted and received high frequency ultrasound at a frequency in a range of 50 to 100 MHz.
4. (previously presented) The interface device of Claim 1, wherein the scan window comprises a cross-linked hydrogel.

5. (currently amended) The interface device of Claim 1, wherein ~~the scan window said solid, non-flowable hydrogel~~ comprises a cross-linked hydrogel and wherein said scan window further comprises a support structure comprising a mesh of fibers filaments embedded in the cross-linked hydrogel.
6. (previously presented) The interface device of Claim 4, wherein said cross-linked hydrogel comprises a cross-linked polymer with water content greater than or equal to 50% by weight.
7. (Original) The interface device of Claim 4, wherein said cross-linked hydrogel comprises polyethylene oxide.
8. (Original) The interface device of Claim 4, wherein said cross-linked hydrogel is formed from polyisocyanate terminated poly(alkylene ether) polyols.
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10. (currently amended) The interface device of Claim 1 9, wherein the distance between said scan window and the transducer is adjustable to position the transducer focus approximately 2 to 6 mm distal to said scan window.
11. (previously presented) The interface device of Claim 1, wherein a distal surface of said scan window has a preformed concave curve to approximate a curvature of an eye.
12. (previously presented) The interface device of Claim 1, wherein the reservoir comprises a plurality of separate pieces between which said scan window is mechanically secured.

13. (previously presented) The interface device of Claim 1, wherein the device incorporates delivery of fluid acoustic coupling material to a distal surface of said scan window.
14. (previously presented) The interface device of Claim 1, wherein the interface device is configured to be removably attachable to the scan head of a high frequency ultrasound imaging system operable at a frequency in a range of 50 to 100 MHz.
15. (previously presented) The interface device of Claim 1, wherein the device incorporates access for surgical instruments.
16. (previously presented) The interface device of Claim 1, wherein the device incorporates a surgical instrument.
17. (previously presented) The interface device of Claim 1, wherein the device incorporates a surgical instrument that allows use of the instrument in positional relationship to the scanned image.
18. (previously presented) The interface device of Claim 2, wherein the interface device is constructed of materials suitable to be sterilized by ionizing radiation.
19. (previously presented) The interface device of Claim 1, wherein said proximal end of said reservoir is configured to allow the transducer to traverse across an intended scan path within said reservoir.
20. (previously presented) The interface device of Claim 1, wherein the scan window comprises a cross-linked hydrogel and a mesh_support extending across the scan window.

21. (currently amended) The interface device of Claim 1, wherein the scan window comprises a cross-linked hydrogel and a support structure comprising a mesh of ~~fibers~~ filaments in a crossing pattern embedded in the cross-linked hydrogel.

22. (currently amended) An interface device for use with an ultrasound imaging system having a scan head with at least one transducer, the interface device being removably attachable to the scan head, the interface device comprising:

a reservoir with a proximal end and a distal end, said proximal end being open and shaped to allow the transducer to be inserted within said reservoir, wherein said proximal end of said reservoir is configured to maintain a fluid tight seal between said reservoir and the scan head, and wherein said distal end of said reservoir is configured to extend past a distal end of the transducer,
a scan window located proximate said distal end of said reservoir through which ultrasound energy is transmitted and received, wherein said scan window is formed of a solid, non-flowable hydrogel,
a fluid tight seal between said scan window and said distal end of said reservoir, and a fluid acoustic coupling medium located within said reservoir and filling a space between said transducer and said scan window,

The interface device of Claim 1, wherein the reservoir has an adjustable length for adjusting a distance between the scan window and the transducer.

23. (new) An interface device for use with an ultrasound imaging system having a scan head with at least one transducer, the interface device being removably attachable to the scan head, the interface device comprising:

 a reservoir with a proximal end and a distal end, said proximal end being open and shaped to allow the transducer to be inserted within said reservoir, wherein said proximal end of said reservoir is configured to maintain a fluid tight seal between said reservoir and the scan head, and wherein said distal end of said reservoir is configured to extend past a distal end of the transducer,

 a scan window located proximate said distal end of said reservoir through which ultrasound energy is transmitted and received, wherein said scan window is formed of a hydrogel with a support structure comprising a mesh of filaments embedded in said hydrogel,

 a fluid tight seal between said scan window and said distal end of said reservoir,

 a fluid acoustic coupling medium located within said reservoir and filling a space between said transducer and said scan window,

 and means for adjusting a distance between said scan window and the transducer to allow adjustment of a position of said scan window with respect to a focus of the transducer.

24. (new) The interface device of Claim 23, wherein said mesh of filaments is arranged in a crossing pattern.

25. (new) The interface device of Claim 23, wherein said reservoir has an adjustable length for adjusting said distance between the scan window and the transducer.

26. (new) The interface device of Claim 25, wherein said mesh of filaments is arranged in a crossing pattern.